

Concomitant Diagnosis of Plasmablastic Lymphoma and Chronic Lymphocytic Leukemia: A Rare Phenomenon

Abstract

Plasmablastic lymphoma (PBL) is a rare, aggressive non-Hodgkin lymphoma which shows blastic morphology and an immunophenotype of plasma cell differentiation while chronic lymphocytic leukemia (CLL)/small lymphocytic lymphoma is an indolent B-cell lymphoma and has a variable clinical course. A CLL transforming into a PBL and the coexistence of CLL with PBL are both extremely rare findings. We report an unusual case of a 72-year-old HIV-negative male who presented with a gingival swelling which was diagnosed as PBL with simultaneous CLL in the blood and bone marrow. Further, in this case, the PBL spontaneously regressed postbiopsy adding to the peculiarity and rarity of this case. This could be due to immune system modulation and can open up a new window to the treatment strategies of PBL in the future.

Keywords: Chronic lymphocytic leukemia, plasmablastic lymphoma, regression

**Sujaya Mazumder,
Sree Rekha Jinkala,
Debasis Gochhait,
Prabhu Manivannan,
Deepak Amal Nath¹**

Departments of Pathology and
¹Medicine, Jawaharlal Institute
of Postgraduate Medical
Education and Research,
Puducherry, India

Introduction

Plasmablastic lymphoma (PBL) is a rare, aggressive Non-Hodgkin lymphoma (NHL) with diffuse proliferation of B-immunoblasts and tumor cells having immunophenotype of plasma cells.^[1] It is reported primarily in the setting of an immunocompromised status, in extranodal sites such as the oral cavity.^[2] On the other hand, Chronic lymphocytic leukemia (CLL) is a low-grade B-cell lymphoma usually manifesting with an indolent, prolonged clinical course.^[3] Richter's transformation a known complication of CLL and is characterized by the development of high-grade NHL such as Diffuse Large B-cell lymphoma (DLBCL) or prolymphocytic leukemia. However, CLL transforming into PBL is extremely rare while the coexistence of CLL with PBL is even more uncommon with only sporadic cases reported in the past.^[4-6] We report an extremely rare case of PBL arising in the setting of an untreated CLL in an HIV-negative patient.

Case Report

A 72-year-old male came with a complaint of rapidly increasing swelling in the right upper gingival region for

3 months [Figure 1a]. Along with this, he also had right cervical lymph node enlargement. On examination, he had massive splenomegaly. Incisional biopsy performed from the gingival mass showed a tumor composed of monomorphic proliferation of large plasmacytoid and immunoblastic cells showing vesicular nuclei, moderate cytoplasm, and 1–3 prominent nucleoli. Frequent mitosis and apoptosis were noted [Figure 1b]. The tumor cells were positive for LCA and CD138 and focally positive for EMA; and negative for CK, p63, CD20, CD79a, CD3, ALK-1, CD56, and lambda restricted. Ki67 index was 95%. EBER ISH (EBV encoded RNA *in situ* hybridization) for EBV infection was positive [Figure 2]. Based on these findings, he was diagnosed with PBL.

Simultaneously, routine hemogram revealed anemia, leukocytosis, and thrombocytopenia. WBC count was $86.8 \times 10^9/L$ with absolute lymphocytosis showing 90% mature lymphocytes suggesting a possibility of CLL. Bone marrow examination showed 78% atypical lymphoid cells on the aspirate with diffuse pattern of infiltration on the biopsy [Figure 3]. The lymphoid cells were positive for CD20, CD5, CD23, and negative for CD 138. Plasma cell percentage on bone marrow was within normal limits.

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Address for correspondence:

Dr. Sree Rekha Jinkala,
Department of Pathology,
Jawaharlal Institute of
Postgraduate Medical
Education and Research,
Puducherry - 605 006, India.
E-mail: sree.path177@gmail.
com

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HIV viral serology was negative. There was no monoclonal spike in the serum or urine electrophoresis and no lytic lesion on the skeletal survey. As he was in the high-risk category of CLL according to modified Rai staging, he was started on bendamustine and rituximab therapy and his counts came back to normal within 2 months of treatment. Interestingly, the gingival tumor regressed in size after the biopsy and within 1 month had disappeared completely.

Discussion

PBL is a rare form of NHL which is believed to arise from postgerminal center, terminally differentiated, activated B cells, and shows unique immunophenotypic profile being lack of expression or weak expression of LCA, pan-B cell markers such as CD20 and PAX-5 combined with strong expression of plasma cell-related antigens such as CD138 and CD 38.^[1] PBL being one of the HIV-associated lymphomas is extremely rare in an HIV-negative setting.^[3]

Although an indolent tumor, second malignancies in CLL have been reported in the past, and retrospective studies on CLL have shown a three-fold risk of developing second malignancies such as lung cancer, breast cancer, and

prostate malignancies.^[7] It is still unclear as to whether this is due to the underlying disease dynamics such as immunocompromised status due to the disease or if it is because of the treatment. Moreover, about 5%–10% can transform into Richter syndrome most commonly to DLBCL.^[8] Transformation of CLL to PBL is extremely rare and there have been only limited case reports of a true Richter transformation where the CLL and PBL arise from the same clone proven by molecular testing.^[9]

The coexistence of CLL with PBL is even more rare and has been described by far in only three patients to the best of our knowledge.^[3,5,6] The first described case was of PBL arising in an HIV-negative, previously untreated CLL patient where the activity of Brentuximab Vedotin in the treatment of CD30 positive PBL was demonstrated.^[5] Another case reported was of the simultaneous coexistence of PBL and CLL in the same lymph node in another HIV-negative, untreated CLL case.^[6] The third and the recent case presented as an ileocecal mass and a soft tissue mass at the left humerus with histologic evidence of PBL along with the coexistence of CLL in the bone marrow and peripheral blood.^[3] To the best of our knowledge, this is the first and the only case to be reported from India of a simultaneous diagnosis of PBL and CLL.

Another interesting finding was the spontaneous regression of the gingival mass after biopsy without initiation of any treatment. Although a feature that has been observed in other cancers in the past, there exists only one case report of a similar finding in PBL where a spontaneous regression of PBL in the upper gingiva was noted in an elderly male who was also EBV infected and HIV negative and one of the possible mechanisms of the spontaneous regression of the PBL could have been mobilization of the immune system against EBV.^[10] While the precise cause is still unclear, it can be postulated that the immune system

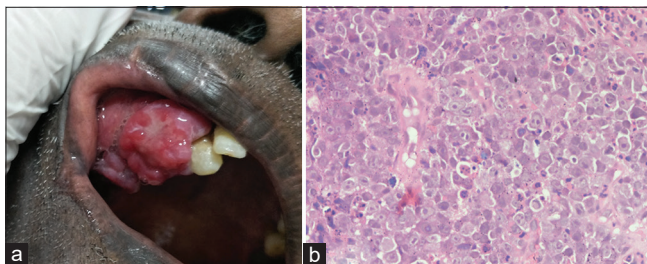


Figure 1: (a) Gingival mass involving the right upper gingiva. (b) Biopsy from gingival mass shows diffuse sheets of the proliferation of large plasmacytoid and immunoblastic cells showing vesicular nuclei, moderate cytoplasm, and 1-3 prominent nucleoli. Frequent mitosis and apoptosis were noted (H and E, ×200)

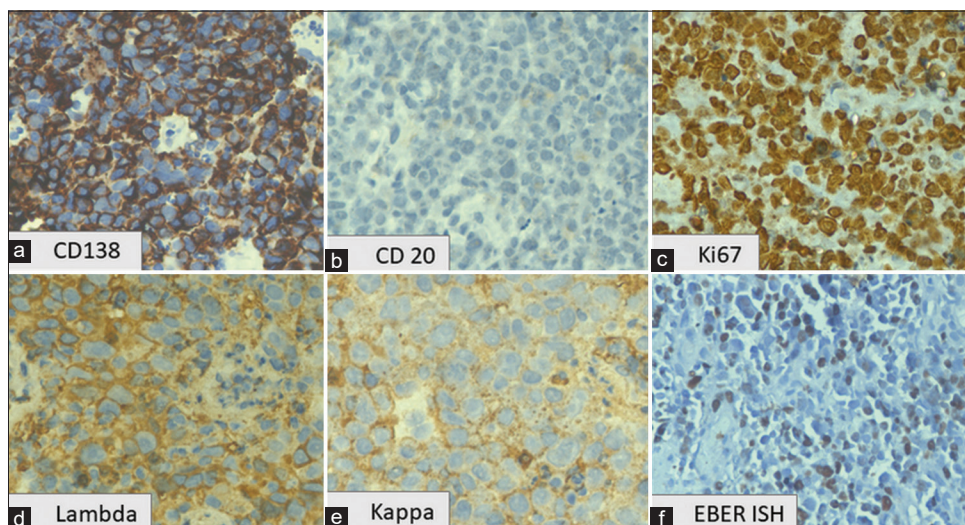


Figure 2: Tumor cells showing positivity for CD 138 (a) and negative for CD 20 (b); Ki67 labeling index is 95% (c); Tumors cells showing lambda strongly positive (d) and Kappa weak focal positivity (e) and nuclear positivity for EBER ISH (f) (DAB, ×400)

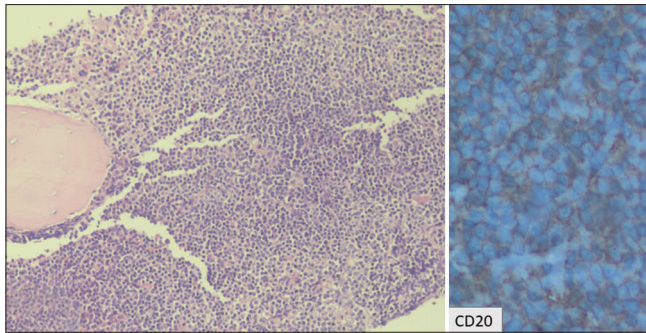


Figure 3: Bone marrow biopsy showing diffuse infiltration by atypical small lymphoid cells with CD20 positivity (H and E, $\times 200$, DAB, $\times 200$)

might be modulated by traumatic factors such as biopsy, infection, or inflammation.^[11] In our case, the injury caused by the biopsy procedure could have led to an inflammatory response leading to activation of the immune system or it could also be an act of the immune system against EBV. Our finding and the previous similar case report throws a light on the fact that even high-grade lymphomas such as PBL could regress spontaneously and that the immune system may have a key role. This finding is worthy of more investigations in the future in terms of identifying the mechanism underlying this phenomenon as it could help in the development of targeted immunotherapies in PBL.

Conclusion

Our case presented with an array of absolute peculiarities which make it exceptionally rare, such as the coexistence of PBL with CLL, PBL in the absence of HIV infection, and spontaneous regression of PBL postbiopsy. All of these make it an extremely intriguing, and fascinating case with a wide palette of learning points.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

References

1. Swerdlow SH, Campo E, Pileri SA, Harris NL, Stein H, Siebert R, *et al.* The 2016 revision of the World Health Organization classification of lymphoid neoplasms. *Blood* 2016;127:2375-90.
2. Delecluse HJ, Anagnostopoulos I, Dallenbach F, Hummel M, Marafioti T, Schneider U, *et al.* Plasmablastic lymphomas of the oral cavity: A new entity associated with the human immunodeficiency virus infection. *Blood* 1997;89:1413-20.
3. Hatzimichael E, Papathanasiou K, Zerdes I, Flindris S, Papoudou-Bai A, Kapsali E. Plasmablastic lymphoma with coexistence of chronic lymphocytic leukemia in an immunocompetent patient: A case report and mini-review. *Case Rep Hematol* 2017;2017:2861596.
4. Robak T, Urbańska-Ryś H, Strzelecka B, Krykowski E, Bartkowiak J, Błoński JZ, *et al.* Plasmablastic lymphoma in a patient with chronic lymphocytic leukemia heavily pretreated with cladribine (2-CdA): An unusual variant of Richter's syndrome. *Eur J Haematol* 2001;67:322-7.
5. Holderness BM, Malhotra S, Levy NB, Danilov AV. Brentuximab vedotin demonstrates activity in a patient with plasmablastic lymphoma arising from a background of chronic lymphocytic leukemia. *J Clin Oncol* 2013;31:e197-9.
6. Ronchi A, Marra L, Frigeri F, Botti G, Franco R, De Chiara A. Richter syndrome with plasmablastic lymphoma at primary diagnosis: A case report with a review of the literature. *Appl Immunohistochem Mol Morphol* 2017;25:e40-5.
7. Hisada M, Biggar RJ, Greene MH, Fraumeni JF Jr., Travis LB. Solid tumors after chronic lymphocytic leukemia. *Blood* 2001;98:1979-81.
8. Tsimberidou AM, Keating MJ. Richter syndrome: Biology, incidence, and therapeutic strategies. *Cancer* 2005;103:216-28.
9. Ramalingam P, Nayak-Kapoor A, Reid-Nicholson M, Jones-Crawford J, Ustun C. Plasmablastic lymphoma with small lymphocytic lymphoma: Clinico-pathologic features, and review of the literature. *Leuk Lymphoma* 2008;49:1999-2002.
10. Igawa T, Sato Y, Kawai H, Kondo E, Takeuchi M, Miyata-Takata T, *et al.* Spontaneous regression of plasmablastic lymphoma in an elderly human immunodeficiency virus (HIV)-negative patient. *Diagn Pathol* 2015;10:183.
11. Marques C, Queiroga H, Marques M, Moura C. Spontaneous regression of a pulmonary adenocarcinoma after core needle biopsy. *Autops Case Rep* 2017;7:20-5.